Claim 10. (Amended): An alloy film in accordance with Claim1 wherein said film has an internal mechanical stress resistance in the range of between about 250 and about 800 MPa.

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REMARKS

Applicants reaffirm their election of Invention I, encompassing Claims 1-10, drawn to a cobalt-iron alloy film comprising iron and cobalt, classified in Class 148, subclass 311, for prosecution on the merits in this application. This election is made without traverse.

In view of this election, and in further view of applicants' election without traverse, it is apparent that the restriction requirement of record will be made final. Thus, applicants have amended the title of the present application to reflect this election. As such, the title of the application has been amended to recognize the subject matter of all the claims examined on the merits in this application, an CoFe alloy film.

All the claims submitted for examination in this application have been rejected on formal and/or substantive grounds. In addition, there is an objection to two of the claims. Applicants have amended their claims and respectfully submit that all the claims currently in this application are patentable over the objections and rejections of record.

Turning first to the objections, Claim 5 stands objected to, under C.F.R. § 1.75(c), as being improperly dependant for failing to further limit the subject matter of a previous claim. Specifically, Claim 5 recites a saturation magnetization upper limit of 2.53 Tesla. Claim 5 depends from Claim 4, which recites an upper saturation magnetization upper limit of 2.50 Tesla. Thus, the Official Action properly objects to dependant Claim 5 for its failure to further limit Claim 4, from which it depends.

Applicants have amended Claims 4 and 5 to reverse the upper limits of their saturation magnetization. That is, the upper limit of saturation magnetization of Claim 4 has been amended to be 2.53 Tesla and the maximum saturation magnetization of the alloy film of Claim 5 has been amended to have an upper limit of 2.50 Tesla. As such, the objection to Claim 5 is removed since amended Claim 5 further limits the scope of Claim 4.

It is emphasized that this amendment introduces no new matter into the application. It is axiomatic that physical properties recited in the specification can be rearranged in the claims without such rearrangement being the basis of an allegation that new matter is introduced into the application.

The second objection of record is directed to Claim 10. Claim 10 stands objected to as being informal for its failure to include the article --the-- at line 3 thereof. Indeed, the Official Action suggests the introduction of that word, after the word "in," at line 3. This introduction has been made. Thus, applicants submit that the objection to Claim 10 is overcome.

Three formal grounds of objection are imposed in the outstanding Official Action. All of these formal grounds of rejection are imposed under 35 U.S.C. §112, second paragraph insofar as the claims subject to this ground of rejection are alleged to be indefinite.

The first ground of indefiniteness resides in Claim 6, wherein a term "said anisotropy" is recited to lack antecedent basis. Applicants concede that this rejection is well taken. Thus, Claim 6 has been amended to recite that the alloy film has --an anisotropy--. This amendment to Claim 6, it is respectfully submitted, makes moot and thus overcomes the absence of antecedent basis.

The second formal ground of rejection is directed to Claims 6, 7 and 8. These claims stand rejected as being indefinite because of the use of the phrase "upon annealing" in referring to the easy axis coercivity, the hard axis coercivity and the magnetic anisotropy of the alloy film. The Official Action inquires whether the claims are directed to the annealed alloy film possessing the recited properties of the annealed alloy film or an unannealed alloy film possessing the recited properties of an unannealed alloy film but which is capable of being annealed at which point the annealed film will possess the recited properties for an annealed alloy film.

Applicants respectfully traverse the allegation of indefiniteness of Claims 6 to 8. Applicants submit that the meaning of these claims is readily understood by those skilled in the art. However, in a spirit of cooperation, and in an attempt to remove any doubt about the meaning of these claims, the term "upon annealing," which appears three times in each of these claims, has been replaced with --after being annealed--. Applicants believe this clarification should dispel any misunderstanding of the meaning of these claims.

To the extent that Claims 6-8 recite coercivities prior to annealing it is apparent that the film of these claims meets the test of (2) in the Official Action. That is, since these claims recite properties prior to annealing, it is apparent that the claims are directed to an unannealed alloy film possessing the recited properties of an unannealed alloy film but which is capable of being annealed at which point the annealed film would possess the recited properties of the annealed alloy film.

The final formal ground of rejection, based on indefiniteness, is directed to Claim 9. Claim 9 is deemed indefinite for use of the phrase "in the range of about 17 and about 65 $\mu\Omega$-cm." That phrase is deemed unclear.

The Official Action correctly suggests that this rejection can be obviated by insertion of the word –between--after "about" at line 3. This amendment has been made to Claim 9. Thus, applicants submit that the indefiniteness of Claim 9 is removed.

Two substantive grounds of rejection have been imposed in the outstanding Official Action. Both of these substantive grounds are asserted against all the claims examined on the merits in this application, Claims 1-10.

The first of these rejections is made under U.S.C. §102(b) as anticipated by or, in the alternative, under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent 4,933,036 to Rawlings et al.

Rawlings et al. is applied for its teaching of examples of alloys having compositions encompassed by the alloy composition of Claims 1-10. Specifically, Rawlings et al. is applied for its disclosure, in Table 1, bridging Columns 1 and 2, of certain alloys disclosed therein. Specifically, Alloy Nos. 4 and 10 contain 34.8 wt % Co; 0.25 wt % Nb; and 64.95 wt % Fe and 34.9 wt % Co; 0.3 wt % Ta; and 64.8 wt % Fe, respectively. In view of this disclosure, the Official Action argues that the alloy of Rawlings et al. anticipates or makes obvious all of the claims examined on the merits in the present application.

Although the literal language of the claims of the present application does not read on Alloy No 4 and 10 of Rawlings et al., as it discussed below, the major distinction between the disclosure of Rawlings et al. and Claims 1 to 10 of the present application is that the claims of the present application are directed to a film. The alloy of Rawlings et al. is not a film. As such, that disclosure does not anticipate any of the claims of the present application.

Attention is directed to the discussion of prior art references in the specification of the present application at Page 6, lines 4-22. Therein, Rawlings et al. is summarized as disclosing a soft magnetic cobalt-iron cast alloy fabricated by vacuum melting and hot rolling a cast ingot to a thickness of 2.5 mm, reheating the strip to above the order-disorder temperature, e.g., about 800°C, and quenching in a brine solution below 0°C.

This summary of that reference and the claimed discussion of Rawlings et al. emphasizes the distinguished nature of the cast alloy Rawlings et al. product, which predicates patentability of the cobalt-iron film of Claims 1 to 10 under both 35 U.S.C. §102(b) and 35 U.S.C. §103(b).

Specifically, the requirement that Claims 1 to 10 be a film distinguishes those claims from the cast alloy of Rawlings et al. Clearly, the relatively large thickness of the Rawlings et al. alloy, e.g. 2.5 mm, establishes that the Rawlings et al. alloys are not films. As such, they do not anticipate, under 35 U.S.C. §102(b), any of Claims 1 to 10.

That a thick alloy sheet of the type taught by Rawlings et al. cannot be employed in the use to which the claimed film of the present application is put, as a magnetic recording thin film head, establishes the unobviousness of the claimed film of the present application over the Rawlings et al. cast alloy.

It is furthermore noted that the processing requirements of forming the Rawlings et al. cast alloy impose prohibitive barriers to formation, in commercially acceptable time and cost, of thin film magnetic recording heads. These constraints emphasize the unobviousness of the claimed distinguished film product of the present application from the cast alloy of Rawlings et al.

As indicated above, there is yet a further distinction which, although redundant, further distinguishes the claims of the present application from that of the Rawlings et al. teaching. That is, Claim 1, from which all the remaining claims ultimately depend, recites that the cobalt-iron alloy film includes between about 55% and about 75% iron and the remainder cobalt. This language, which recites percentages by weight, based on the total weight of the film, excludes the presence of other metals. The Rawlings et al. alloys, applied in the Official Action rejection, include either niobium or tantalum.

Not only does this distinction establish the patentability of Claims 1 to 10, under 35 U.S.C.§102(b), as being novel over Rawlings et al. but, in addition, establishes the patentabiltiy under of these claims under 35 U.S.C. §103(a) as being unobvious thereover. Those skilled in the art are aware of the criticality of maintaining the highest possible saturation magnetization in write head thin films. Those skilled in the art are further aware that the highest possible saturation magnetic moment is obtained when a cobalt-iron alloy film is utilized. The inclusion of further metals compromise the degree of saturation magnetization. Thus, the disclosure of cobalt-iron alloys containing other metals does not make obvious a cobalt-iron alloy free of other metals, let along the fact that the claimed cobalt-iron alloy of the present application is also a thin film, not a cast alloy.

The second substantive ground of rejection is identical to the first but for the identity of the reference. The second substantive ground of rejection is predicated upon the disclosure of Kakuno et al., J. Electrochem.Soc., 144, No.9, 3222-3236 (September 1997). Kakuno et al. is applied as making unpatentable, under 35 U.S.C. §102(b), or, in the alternative, under 35 U.S.C. §103(a), for its disclosure of Figure 2, at Page 3223, Figure 3 at Page 3224, as well as the disclosure of Alloy Nos. 7-9 in Table 1, at Page 3224.

Presumably, Figures 2 and 3 are applied because they encompass an alloy having a cobalt to iron ratio within the range set forth in Claims 1-10 of the present application. More specifically, the Official Action relies on Table 1, which includes three alloys wherein the molar ratio of cobalt to iron is 30:70. A cobalt-iron alloy containing 30 mole % cobalt represents a weight ratio of about 31.1 weight % cobalt and 68.9 weight % iron. As such, that disclosure is not anticipatory of Claims 2 and 3 which require the iron constituency to be between about 60 wt.% and about 66 wt.% and between about 62 wt.% and about 65 wt.%, respectively.

More significantly, the teaching of Kakuno et al. does not establish reduction to practice of an alloy film of the type set forth in Claims 1 to 10. This is so in that Kakuno et al. devised a crude electrodeposition of cobalt-iron alloys, over the complete range of concentration, on a copper substrate, to study the structure, composition and morphology of these alloys. The disclosure of Kakuno does not disclose any Co-Fe alloy film, let alone a Co-Fe alloy film within the scope of Claims 1 to 10, to one skilled in the art.

For example, the Kakuno et al. reference does not provide any of the physical properties included in Claims 1 to 10, which define the claimed Co-Fe alloy film of the present application. That these physical properties are glaringly absence in Kakuno et al. is not surprising. A skilled artisan will appreciate that the electrodeposited Co-Fe alloys described in Kakuno et al. have a heterogeneous morphology composition.

In summary, Kakuno et al. is even further removed from the claims of the present application than is Rawlings et al. Whereas, Rawlings et al. is directed to a cast alloy, distinguished from a film, Kakuno et al. is not drawn to a recoverable product at all. The